of the diaphragm was noticed; and the varying condition of that muscle, and of the lungs and pleura, with their mutual relations, are commented on.

The importance of this passive tension of the diaphragm is indicated, and exemplified both physiologically and pathologically. It is essential in retaining the supplemental air within the lungs, in restoring the equilibrium of repose, in economizing active muscular power, and in maintaining the pericardial space, &c.

The action of the diaphragm in relation to the walls of the chest and to other muscles is next discussed; and the influence of the diaphragm in drawing in the chest-walls, under certain circumstances, is pointed out, and illustrated by cases of injury to the spinal cord.

The action of the intercostal muscles, as necessary adjuncts to the diaphragm and as muscles of inspiration, is insisted on and illustrated by diagrams; and a summary of their action is given.

The agency of the serratus magnus is then discussed; and reasons are advanced, supported by observation and experiment, to show that it is only under special conditions and to a limited extent that it can be regarded as taking any part in the act of inspiration.

The mobility of the different costal regions and of the sternum is exemplified by observation and experiment.

Lastly, the question of abdominal and thoracic breathing, severally in the male and female, is considered; and reasons are adduced for concluding that the received opinions on this subject are erroneous.

III. "Researches on the Hydrocarbons of the Series C_nH_{2n+2}."—VII. By C. Schorlemmer. Communicated by Prof. Stokes, Sec.R.S. Received April 27, 1871.

In a former communication*, I have shown that the paraffins, the constitution of which is known, may be arranged in four groups. The first group, which I called *normal paraffins*, contain the carbon atoms linked together in a single chain. Of these I have obtained some new ones, which I shall describe more fully in a further communication. The normal paraffins which I have so far studied are given, together with their boiling-points, in the following Table:—

	From petroleum.	From the acids of the series $C_nH_{2n-2}O_4$.	So-called alcohol radicals.	
C_5H_{12}	37°– 39°	——	——	
			Dipropyl.	From mannite.
C_6H_{14}	69°– 70°	69°·5	69°–70°	71·5°
C_7H_{16}	98°– 99°	100°·5	——	——
			Dibutyl.	From methylhexyl carbinol.
C_8H_{18}	123°–124°	123°–124°	123°–124°	124°

* Proc. Roy. Soc. vol. xvi. p. 367.

That these paraffins have really the constitution which I have ascribed to them follows partly from their mode of formation; thus dipropyl was obtained from the normal propyl iodide, and dibutyl from normal butyl iodide. The constitution of the others was determined by converting them into alcohols and studying the oxidation products of the latter; thus the hexyl hydride from petroleum, as well as that obtained from mannite, was transformed into secondary hexyl alcohol, which on oxidation yielded acetic acid and *normal* butyric acid.

In the communication above referred to, I placed the hydrocarbon C_8H_{18} from methyl-hexyl carbinol amongst another group; but I have found now that this body is identical with dibutyl and also with the hydrocarbon which Zinke obtained from primary octyl alcohol. This chemist prepared also dioctyl, $C_{16}H_{34}$, which consequently is a normal paraffin; and it appears probable that dihexyl, which Brazier and Gossleth obtained by the electrolysis of œnanthylic acid, belongs to this group too.

We are now acquainted with the following normal paraffins:—

	Boiling-points.		
	Found (mean).	Calculated.	Difference.
$C\ H_4$	——	——	
$C_2\ H_6$	——	——	
$C_3\ H_8$	——	——	
$C_4\ H_{10}$	1°	1°	
$C_5\ H_{12}$	38°	38°	37°
$C_6\ H_{14}$	70°	71°	33°
$C_7\ H_{16}$	99°	100°	29°
$C_8\ H_{18}$	124°	125°	25°
$C_{12}\ H_{20}$	202°	201°	$4 \times 19°$
$C_{16}\ H_{34}$	278°	278°	$4 \times 19°$

From this it appears that the boiling-point is not raised 31° for each addition of CH_2, as I formerly assumed, but that, as the calculated numbers show, the difference between the boiling-points of the lower members decreases regularly by 4° until it becomes the well-known difference of 19°.

IV. "Note on the Spectrum of Uranus and the Spectrum of Comet I., 1871." By William Huggins, LL.D., D.C.L., V.P.R.S. Received May 10, 1871.

In the paper "On the Spectra of some of the Fixed Stars"*, presented conjointly by Dr. Miller and myself to the Royal Society in 1864, we gave the results of our observations of the spectra of the planets Venus, Mars, Jupiter, and Saturn; but we found the light from Uranus and Neptune too faint to be satisfactorily examined with the spectroscope.

* Phil. Trans. 1864, p. 413; and for Mars, Monthly Notices R. Astr. Soc. vol. xxvii. p. 178.